Modeling natural disasters to strengthen power grids

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by Russell Bent

It’s 6:42 p.m. and the lights go out, while hurricane winds lash the trees overhead. After two days without power, cellphones no longer have any battery and, even if they do, there is no service because cell towers are down. After three days, food in the fridge is going bad. Nearby restaurants and grocery stores are closed. It’s easy to see how prolonged power outages can quickly become a serious problem.

Over the past 13 years, more than 20 major hurricanes and snowstorms struck electric power grids and triggered outages across the United States. Every blackout left hundreds of thousands of people in the dark for several days. These power cuts disrupted daily life, threatened peoples’ safety and wellbeing, and caused millions of dollars in economic losses.

To address the need to reinforce power grids, scientists at Los Alamos National Laboratory have developed a simulation tool for utility companies. This research was funded by the Smart Grid R&D program within the U.S. Department of Energy’s (DOE) Office of Electricity (OE). It is one of more than 80 projects in the Grid Modernization Laboratory Consortium funded by the Department of Energy. The agency is investing in those projects to spur the research and development of computer tools that can support resiliency of power distribution systems in the U.S.

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